

XI. Neuroptera-Planipennia collected in Algeria by the Rev.
A. E. Eaton. By ROBERT McLACHLAN, F.R.S., &c.

[Read April 4th, 1898.]

I HERE enumerate the species found by Mr. Eaton in various parts of Algeria, during his stay in that country from the end of 1892 to the middle of 1897, interrupted only by occasional short visits to England. Mention is occasionally made of materials from the same region from other sources, according to specimens in my collection, but only when the same species are concerned.

The number of species is not large, but nearly everything is recorded from the country for the first time, and a few new species are described.

The general aspect of the materials is Mediterranean with occasional extensions to Asia Minor and Central Asia. No Panorpidae, Sialidae, Rhabdidiidae, Mantispidae, or Dilaridae were found, but I have seen a *Mantispa* from Algeria, and the other Families probably exist there. Much remains to be done in the forests of the higher districts.

The Family Coniopterygidae is not included. There is a considerable number of the minute insects representing this Family, and of four or five species, which will, I hope, receive attention in another paper.

MYRMELEONIDÆ.

Palpares hispanus, Hag.

Hab. Médéa, north side of Koudia Sma, about 3,180 ft., and another locality in the vicinity, July 1893; Constantine in June 1895, 2 ♂ and 2 ♀. Probably it is distributed all over Algeria, and is the species noticed by Lucas as *P. libelluloides*.

P. libelluloides has been recorded as occurring in Marocco, but in the Entomol. Monthly Mag., xxv, p. 346, when writing on Neuroptera captured by Mr. J. J. Walker in Marocco, I implied a doubt as to confusion with *P. hispanus*, and at the same time gave distinguishing characters for separating the two.

Palpares angustus, sp. n.

Head and thorax above yellowish-ochreous with a cinereous tinge: face whitish yellow: palpi blackish piceous, the labial about thrice the length of the maxillary, second and third joints nearly equal, clavate at the tips; mandibles shining black; antennæ black, about as long as the pro- and meso-nota united: pronotum much broader than long, narrowed anteriorly, clothed with cinereous hairs, a broad median black longitudinal band (continued on the meso- and meta-nota and as a fine line on the hinder half of the vertex), sides broadly black, the disk divided into three raised portions by two deep transverse impressed lines; on the meso-notum (in addition to the black median band) there is a fine curved black line on each lateral lobe and the black margins of the pronotum are also continued here, but narrower, and more vaguely also on the meta-notum: underside of thorax cinereous clothed with whitish hairs: legs black (coxæ cinereous), with short stiff black hairs and fine adpressed cinereous pubescence: abdomen above olivaceous, becoming darker, and finally blackish, towards the apex, black beneath from base to apex, base clothed with rather short whitish hairs; appendages of ♂ short (5 mm.), black, cylindrical, much curved, gradually clavate to the obtuse apex, clothed with dense short black hairs.

Wings of ♂ long and narrow, the two pairs of about equal breadth, the anterior slightly longer; costal edge straight, the costal area narrow; inner margin gradually rounded and slightly sinuate in the apical portion; ground colour whitish hyaline, more decidedly whitish in the posterior: anterior wings with the neuration mostly whitish (but the radius and upper cubitus nearly wholly black) rather closely and nearly evenly sprinkled with small black points, forming a double row along the inner margin from the apex, costal nervules mostly with a black point at each end and another in the middle; there are also four fasciate black spots, (1) at about $\frac{2}{3}$ ths. from the base small and not extending half across the wing (almost connected with larger points on the branch of the lower cubitus), (2) before the middle extending half across, sometimes interrupted or sometimes only an isolated discal spot, (3) somewhat oblong, going half across, often broken up in the lower half (all these start from the radius), and (4) a pterostigmatic series of connected spots with an elongated linear one below them; pterostigma small, whitish; the sector radii originates in the first fasciate spot, and it has a branch directed towards the base; posterior wings without the small black irrorations (save a few at the base of costal nervules), but with a series of rather large, more or less connected, black spots along the inner margin (except on the basal portion);

4 black transverse fasciæ, viz. : (1) a reniform spot placed just beyond the fork of the lower cubitus, (2) a band before the middle, starting from the radius, dilated in its lower portion (not reaching the inner margin), and sometimes emitting a process directed towards the base, (3) a broad band starting from the costal edge, and extending more or less to the inner margin (where it is often connected with the row of spots), very irregular on its inner side, and often produced in a K-shaped manner, (4) an apical band more or less broken up by spots of the whitish ground.

Length of body, ♂ with the appendages 61 mm. Expanse 107 mm. Greatest breadth of anterior wing 14 mm.

Hab. Biskra, 11th and 15th June, 1897, 2 ♂.

Mr. Eaton notes that it rests by day on shrubs, but easily takes alarm, and then mounts in the air out of sight.

P. angustus, var. *oranensis*, nov.

Differs from the type from Biskra in its slightly larger size, the black points on the anterior wings larger and more numerous, the fasciate bands broader and more distinct, much more so in the posterior wings.

In the ♀ the abdomen is apparently wholly olivaceous, femora externally olivaceous. Wings broader, the pattern of the markings essentially as in the ♂, but the transverse bands are broader and more distinct, especially in the posterior, where band 3 forms a very broad irregular K.

Length of body, ♂ with appendages 65—66 mm., ♀ 45 mm. Expanse ♂ 112—120 mm., ♀ 126 mm. Greatest breadth of anterior wing ♀ 19 mm.

Hab. Méchéria, Oran (*L. Bleuse*), 2 ♂ 1 ♀.

The character of the markings of the wings is extremely unstable both in the type form and variety, and is seldom alike on the opposing wings of the same individual.

This species seems to be distinctly related to *P. patiens*, Wlk., from India, *P. walkeri*, McLach., from Aden, *P. solidus*, Gerst., from Mesopotamia, and probably also to *P. cephalotes*, Klug, and *P. papilionoides*, Klug, from Arabia.

Gymnocnemis variegata, Schnd. (*Aplectrocnemis multipunctata*, Costa).

Hab. Médéa, between Dakela and Lodi, one example. A wide-spread insect over the Mediterranean Region and

extending to Turkestan; always apparently very rare, but no doubt owing to want of systematic searching.

Creagris plumbeus, Oliv.

Hab. Algiers, on the ramparts, 3rd May, 1893; Sidi-Ferrouch, on the coast west of Algiers, 8th May, 1893; Azazga, at light in the inn, 13th September, 1893; various localities about Biskra in May and June, 1894; 13 examples in all.

Those from Algiers and neighbourhood equal the largest South European examples, those from Biskra are distinctly smaller. The markings on the pronotum vary. In all (excepting one ♂ from Biskra) the dark interruptions on the neurulation are absent or scarcely visible, but examples from Sicily are similar in this respect. I possess the species also from Tiout and Méchéria in the province of Oran (*L. Bleuse*).

Hagen has pointed out (*Stett. ent. Zeit.*, xxvii, p. 289) that the probable range of this insect is very great, if certain forms presenting slight differences are considered as scarcely worthy of separate names. The same form (slightly modified) would thus extend over all the Mediterranean region, the whole of Africa to the Cape of Good Hope, Asia Minor and Central Asia, and probably to India and Ceylon if *C. perfidus*, *sedulus* and *adversus*, Walk. (scarcely separable *inter se*) be considered.

C. murinus, Klug (a synonym of *plumbeus*) is given by Hagen (l. c.) following Schneider, as extending from Syria to the Cape of Good Hope, and further on (p. 402) as from the Cape only. Klug, *Symb. Phys.*, gives Syria as the locality, and on pl. xxxvi, fig. 5 it is indicated as *syriacus*, a name that does not occur in the text.

Myrmeleon lugdunensis, Villers, has been identified with *C. plumbeus*. Could this be sustained that name would have priority; the very short description does not convey to my mind any indication that Villers had this insect before him.

Myrmecaelurus atrox, Walk.

Hab. Biskra, 3rd June, 1894, 3 ♂, 2 ♀. Practically agreeing with Walker's type from Turkey; the Indian *M. acerbus*, Walk., is perhaps not different. Differing from typical *M. trigrammus*, Pallas, in its smaller size, in

the absence of the strong yellow tinge on the wings, and in most of the longitudinal nervures (and parts of the neuration otherwise) being interrupted with blackish of which there is rarely a trace in *M. trigrammus*: in this latter respect it agrees with Klug's description of *M. lætus* from Arabia Deserta: "alæ hyalinæ, nervis fusco-albidoque-variegatis reticulatæ;" this latter is usually considered a synonym of *trigrammus*.

I have undescribed species of the genus from the Province of Oran.

Macronemurus appendiculatus, Latr.

Hab. Médéa, 27th June, 1893, Constantine, 14th and 16th June, 1894, Bône, 11th June, 1896, Le Tarf, 24th June 1896. 4 ♂, 1 ♀. Also from Perrégaux, Oran (*L. Blouse*).

Macronemurus elegantulus, sp. n.

Pale yellow. On the antennal region is a large blackish space (in which the antennæ are seated) forming a broad shining black triangle below the antennæ the lower edge of which is slightly excised (like a broad \wedge): antennæ brownish black, the two basal joints yellow, somewhat annulate with brownish beneath; on the swollen vertex is a blackish \cap -shaped spot: pronotum scarcely longer than broad, very slightly narrowed anteriorly, on the middle a broad blackish longitudinal band the whole length, dilated anteriorly, and on each side a narrow abbreviated blackish line, not reaching the anterior margin; mesonotum with a very broad median black band dilated anteriorly, and another on each side at the base of the wings: metanotum having the anterior lobe margined with blackish, and a spot on each of the other lobes; on each side of the thorax a blackish maculose band: legs pale yellow, anterior and intermediate tibiæ spotted with black externally, tibiæ at apex and the tarsal joints at their apices furnished with black spine-like hairs, on the back of the posterior femora of the ♂ is a series of long curved hairs diminishing in length towards the apex: abdomen for the most part blackish but with a (sometimes obsolete) yellowish maculose stripe on each side, clothed with short whitish hairs; appendages of the ♂ as long as the last two segments, curved, cylindrical, yellowish, clothed with long hairs.

Anterior wings narrow, only slightly dilated to the apex which is scarcely angulate, the posterior slightly shorter: hyaline, the edge all round finely blackish, neuration for the most part whitish, but the costal nervules are usually slightly fuliginous, as are those in

the disk, and occasionally the subcosta is faintly marked with fuliginous, network rather open, pterostigma opaque yellowish, wing-roots yellow.

Length of body ♂ (with appendages) 17—21 mm., ♀ 17—21 mm. Expanse 36—40 mm.

Hab. Biskra, May and June, 1894, also Méchéria, South Oran (*L. Bleuse*), about 18 examples in all. Two ♂ from Aïn Séfra, South Oran, differ slightly in having the neuration nearly wholly fuliginous, but not otherwise.

This small species should be allied to *M. linearis*, Klug, from Syria, but can hardly be identical therewith, differing especially in the markings of the pronotum according to the description.

I direct attention to the long hairs on the posterior femora of the ♂ mentioned in the foregoing description. These are present, and even in a more marked degree, in several undescribed species, and they probably exist in some already described, but they are wanting in the two larger species—*M. appendiculatus* and *M. bilineatus*.

Myrmelcon oulianini, McLach.

Hab. Biskra, 2nd June, 1894, 2 ♂. I have also 1 ♀ from Méchéria (*L. Bleuse*), and another ♀ from Suez (25th June, *J. J. Walker*).

These individuals vary somewhat *inter se*, but all pertain I think to one species, identical with the type (not now before me) from Turkestan described and figured in the Neuroptera of Fedtschenko's 'Turkestan'; the figure should serve for identification. The ♂ has two short cylindrical appendages at the apex of the abdomen after the style of *Macronemurus*, but very much shorter, and not sufficiently indicated in the figure on account of the position. Eventually a separate genus (allied to *Myrmecaelurus*) will probably be formed to receive the species. I was inclined to place it in *Brachynemurus*, an American genus founded by Hagen, but the shorter spurs of the Old-World insect, or rather the longer first tarsal joint, scarcely accord: yet *Brachynemurus* is made up of by no means congruous materials, such species as *B. sackeni* having a longer first tarsal joint than the others, and ♂ appendages that rival those of *Macronemurus* in length.

I believe that the range of the same species from Algeria to Turkestan has been long proved in entomology.

In addition to *M. oulianini*, I may cite the curious *Myrmecaelurus fedtshenkoi*, McLach., which occurs in the Province of Oran in a slightly modified form.

M. oulianini is so closely allied to the Indian *M. morosus*, Walk., as to induce a suspicion that it may be only a form thereof. *M. infensus*, Walk., also from India, would be a generic ally on a subdivision, as would certain South African species, such as *M. trivirgatus*, Gerst., &c.

Myrmeleon distinguendus, Rbr.

Hab. Biskra, 3rd June, 1894, two examples, larger than others from Portugal (?) and Marocco in my collection.

This insect might be overlooked as a small *Crcagrisc* were it not for the neuration and spurs. Schneider, Stett. ent. Zeit., vi, queries this species as identical with *M. cinereus*, Klug; I think the identity very probable.

Myrmeleon microstenus, sp. n.

Body slender, blackish, clothed with short sparse whitish pubescence: antennæ about as long as the pro- and meso-thorax united, the club stout but gradually formed, colour blackish, faintly ringed with yellowish at the sutures, the basal joint entirely and the second beneath pale yellow: head blackish above, varied with yellow, a yellow transverse band at the top of the declivous portion in which is an angulate row of six small black spots, a large black space occupies the antennal region, continued between and below the antennæ as a small ^-shaped mark, face pale yellow, labial palpi pale yellow with a small blackish spot on the clavate terminal joint externally: pronotum twice as long as broad, narrow, its sides parallel, with a constriction at the transverse sulcus just before the anterior margin blackish with indications of three fine longitudinal whitish lines, and anteriorly on either side with a <-shaped whitish spot angulate in its middle where intersected by the transverse anterior sulcus: mesonotum blackish with indication of a median whitish line and two short parallel similar lines on each side lobe, the post-scutellum with a whitish median line and whitish margins; sides blackish obscurely varied with whitish, pectus whitish yellow; legs slender, whitish; anterior coxæ with a black mark externally, the femora blackish externally with a pale ring before the apex, tibiæ whitish with a black ring externally before the middle and another at the apex, tarsi (and in all the legs) whitish with the second to fourth joints wholly, and the fifth at the apex, black; intermediate and posterior femora with some black points externally and a black half-ring before the apex, the same applying to the tibiæ also only

the points are less numerous, and the apical ring more distinct ; hairs of legs whitish with a few blackish intermingled ; first tarsal joint longer than, and the fifth as long as, the 2nd to 4th united ; spurs slender, testaceous, longer than the 1st tarsal joint in the posterior legs, and equalling the first 3 tarsal joints in the anterior ; abdomen slender, blackish, a whitish spot on each side of the segments after the second, placed near or at the anterior end, elongate on the third segment but becoming more rounded on the apical segments (partially obliterated by desiccation), the narrow terminal segment yellow, furnished ventrally with apical black spines (♂ ?).

Wings long and narrow, subacute, the posterior somewhat shorter, hyaline ; neuration whitish interrupted with black, causing a variegated appearance, especially on the anterior, where there is a series of seven or eight short black lines along the radius, the last forming a spot before the junction of the radius and subcosta, another spot (almost united with the preceding) at the junction and invading the pterostigma which is otherwise whitish, some larger black lines along the lower cubitus, and one at the junction of the lower branch with the hind margin, a conspicuous slightly angulate oblique black line along the inner series of (about 8) gradate nervules, the axils of the marginal furcations blackish, as are also most of the transversals ; in the posterior the black marks are nearly absent, that at the pterostigma being the only one at all noticeable ; in the anterior the sector radii has its origin near the middle of the wing, but in the posterior it commences much nearer the base.

Length of body, 17 mm. ; expanse 39 mm. ; greatest breadth of anterior wing 5 mm.

Hab. Biskra, 26th April, 1895, one example at light.

A very delicate little Ant Lion, deceptively resembling *Gymnoenemia variegata*. Allied to *M. nemausiensis*, Bork. (*i.e.*, to the true species of that name, *cf.* Entomol. Monthly Magazine, xxv, p. 345), but more delicate, and with the pronotum differently marked, &c. Also probably allied to *M. tenellus*, Klug, but I do not think it can be identical therewith according to the description and figure. Lucas recorded *M. tenellus* from Algeria, but it is not possible to determine the exact species without examining the material.

In Hagen's "Synopsis Specierum" (Stett. ent. Zeit., xxvii, p. 148), *M. tenellus*, Klug, is referred to the genus *Creagris*, but the figure does not show the neural character of that genus, and Weber's figures are usually of extreme accuracy.

ASCALAPHIDÆ.

Bubopsis (n. nov.*) *eatonii*, sp. n.

Black; head and thorax clothed with very dense white pilosity, in which is a tuft of black hairs on the posterior edge of the vertex between the eyes, and a row of black hairs on the front part of the mesonotum; labrum and clypeus pale yellow (the rest of the head above concealed in the pilosity), back of head pale yellow, with a semicircular fuliginous mark on either side: antennæ much shorter than the wings, blackish (not annulated), but pale yellow before the broad flattened club which latter is yellow in its basal and blackish in its apical half; pronotum pale yellow; mesonotum black with large yellow spots, whereof two on the scutellum are conspicuous; legs black, the femora beneath and the tibiæ externally pale yellow, femora and tibiæ clothed with white pilosity, and with longer blackish spines on the tibiæ and tarsi, spurs and claws blackish piceous: abdomen black with a cinereous tinge, a yellowish spot on each side of the posterior margin of each segment, a yellow lateral line, beneath there is a yellow spot on each side of the first segment and the margins and posterior edge of the second are also broadly yellow; appendages of the ♂ long (6.5 mm.), subcylindrical, gradually divergent from the base, and again convergent towards the apex, enclosing a very broad oval space, the apices slightly outcurved and applied one against the other, beneath at about half its length each appendage emits a long (4 mm.), slender, cylindrical branch, directed downward and backward, the opposing branches touching at the tips, and there slightly thickened; on the superior outer edge of each appendage beyond the middle is a geniculation, which is produced into a distinct (about 2 mm.) short stout cylindrical branch, curved slightly inward, and provided with black teeth at its obtuse apex; in colour the appendages are for the most part yellow, but black above and externally in the basal half and the tips of the branches are also black, they are clothed with short spinose hairs, which are very dense on the inner apices, and each appendage has also a dense inner fringe of fine white hairs in its basal half.

Wings moderately broad, hyaline, the wing-roots yellowish; neuration black, but the costal margin, the subcosta, and the sector radii (the latter indistinctly) are whitish, the subcosta with a short black streak at the base of each of the costal nervules (a few of these latter are whitish towards the base); 23 costal nervules in the anterior, and 19 in the posterior wings; 6 and 5 cellules before origin of the sector radii, 5 branches to the latter, of which the first is

* *Bubopsis* = *Bubo*, Rambur (1842 restricted), preoccupied in Aves.

distant from the others which are parallel ; pterostigma whitish, enclosing four strong black nervules, of which the outer is forked at the end ; poststigmatic area in the anterior wings, consisting of a lower row of 5 large cellules and an outer row of 10 or 11 small cellules, with one or two cellules interposed, in the posterior the outer cellules are larger, and there are apparently no interposed cellules.

Length of body without appendages, 10 mm. ; length of appendages, 6.5 mm. ; length of anterior wing 29 mm. ; greatest breadth of same, 7.5 mm. ; expanse 60 mm.

Hab. One ♂ from a hill-top near Biskra, 1st May, 1897.

Very distinct from *B. hamatus*, Klug, and *B. agrioides*, Rambur, (which appear to be closely allied) by the comparatively broader wings, the colours of the body, and the distinctly white costa and subcosta, and still more so by the character of the ♂ appendages, which although formed after the same plan, differ greatly in details, such for instance as the outer curve which causes them to enclose a nearly circular space, and especially in the *branch* formed at the point of geniculation, there being only a rounded tubercle at this point in the species just alluded to.

The species figured in Savigny's "Description de l'Égypte," pl. 3, fig. 2 (1) cannot belong here, neither do the appendages accord with those of the other species unless they were distorted in some way.

The *Bubo hamatus* noticed and figured by Lucas in the "Exploration scientifique de l'Algérie," Insects, p. 137, pl. iii, figs. 5 and 5A, cannot pertain here, nor can it belong to the same genus, inasmuch as the ♂ has no prominent appendages. Probably it is a *Siphlocerus* or allied thereto. I have more than one species (at present undescribed) from Algeria that should perhaps be placed in that genus.

Bubopsis gravidus, sp. n.

Blackish, varied with piceous, clothed with long and dense cinereous hairs on the face, vertex and underside of thorax, and with short and sparse cinereous hairs on the thorax above ; face ochreous yellow, back of head brown ; antennæ much shorter than the wings, black up to the short and thick club, which is wholly yellowish ; thorax varied with reddish piceous above and on the sides ; legs wholly reddish yellow, the tarsal articulations scarcely blackish, claws

piceous: abdomen discoloured (through decomposition of eggs?), but with indications of having a broad dorsal and ventral reddish piceous or yellowish stripe.

Wings comparatively broad, hyaline, but with a smoky tinge (probably wanting in less mature individuals) which in the posterior becomes smoky yellowish, wing-roots reddish piceous; neuration black, but the costa and subcosta are reddish brown; 23 costal nervules in the anterior and 18 in the posterior; 6 and 3 cellules before origin of sector radii, which has 5 branches; pterostigma pale brown enclosing 3-4 black nervules; poststigmatic area with a lower row of 5 large cellules and an outer row of 8 or 9 smaller ones in the anterior, 3 large lower cellules and about 5 smaller and outer in the posterior.

Length of body 25 mm.; length of anterior wing 29 mm., greatest breadth of same 8 mm.; expanse 61 mm.

Hab. One highly mature ♀ from Azazga, 6th Sept., 1893, at light in the inn.

It is scarcely possible that this can be the ♀ of the preceding species, neither can it pertain to *B. hamatus* or *agrioides*.

Ascalaphus ictericus, Charp.

Hab. Constantine, 17th and 18th May 1895. A widespread species in Algeria.

NEMOPTERIDÆ.

Halter barbarus, Klug (*Nemop. algirica*, Rbr.).

Hab. Aïn Kriar, 22nd June, 1896, on sandy ground in the "scrub" near the W. base of Djebel Ouast. Mr. Eaton remarks:—"Common at La Calle near the sea, especially on the hill W. of the town." A well-known Algerian species.

I have recently described (Bull. Soc. Ent. France, 1898, p. 169) a small species of this Family under the name *Croce chobauti* from Ghardaia in South Oran; and M. Brongniart has recorded the occurrence of *Halter* (?) *imperatrix*, Westwood, from somewhere in the same district (Bull. Mus. Paris, 1896, p. 30), which is very remarkable if his identification be correct, the species belonging to tropical West Africa.

OSMYLIDÆ.

Sisyra iridipennis, Costa.

Hab. Le Tarf at the Krelidj Zaora, 19th June, 1896, one example agreeing precisely with types from the island of Sardinia received from Costa.

A species remarkable for the black head and thorax and shining black first and second joints of the antennæ, the rest of the insect being pale yellowish.

HEMEROBIIDÆ.

Berotha catoni, sp. n.

Head and thorax yellowish-cinereous, densely clothed with cinereous hairs mixed with blackish : antennæ shorter than the body, dull yellowish, first joint long and stout, but shorter than the head, slightly clavate, clothed with long blackish hairs, second joint cupuliform, about twice the length of each of those succeeding which are very numerous and transversely moniliform ; eyes lead-coloured with a cinereous tinge ; face very short ; pronotum longer than broad, with a raised median longitudinal carina ; mesonotum varied with fuscous ; metanotum with a fuscous spot on each lobe : abdomen fuscous (discoloured ?) with long and dense cinereous hairs, the apex yellowish, the inturned, slightly divaricate, filiform appendages about one-third the length of the abdomen, yellowish, clothed with very long outstanding pale hairs, the tips slightly thickened and blackish : legs yellowish with pale hairs, a black spot on the trochanters externally, a ring near the base of the femora and at the apex of the tibiæ, and the tips of the tarsal joints, blackish, first tarsal joint longer than the others united.

Anterior wings elongate, gradually dilated to beyond the middle, the apex obtuse, rounded, not excised, subcinereous, hyaline : venation for the most part whitish, but closely set with deep black tubercles, whence arise long cinereous (blackish in certain lights) hairs, subcosta and radius almost entirely black ; costal margin narrow at the base, and then rather suddenly dilated, afterwards straight, with about 13 transverse costal nervules before the end of the subcosta, all furcate and mostly twice forked, marked with black spots on the margin and with larger and more extended similar spots on the pterostigmatic region, the minute marginal furcations all round the wing marked with black spots, and there are small marginal tubercles between the nerve ends, the long marginal ciliations, pale, but blackish at the site of the black spots ; the two transverse nervules in the area between the radius and sector, two cubital

nervules near the base, and an oblique dislocated series of 5 gradate nervules on the disk, all deep black and margined with blackish; sector radii with four branches, upper branch of lower cubitus with three simple branches, the lower with two. Posterior wings hyaline, iridescent, narrower, shorter, and less obtuse at the apex, not excised; neuration for the most part whitish, but the small apical forks, and the base of the larger furcations are mostly black; the single dark black transversal between the radius and sector is margined with blackish, the only other transversals are two cubitals in a line towards the middle of the inner margin and another nearer the base; sector radii four-branched, arising much nearer the base than in the anterior; along the lower branch of the upper cubitus and the upper branch of the lower cubitus, towards the base, are a few long microscopic blackish scales.

Length of body 4.5 mm., expanse 13 mm.

Hab. Biskra, 24th April, 1895, one ♂ at light.

This interesting little insect is by far the smallest of the known species of the genus, and otherwise remarkable for the entire and rounded apex of the anterior wings.

I would call attention to some remarks by me on the presence of scales on the wings of this genus (of which *Isoscelipteron*, Costa, is scarcely more than a synonym) in the Entom. Monthly Mag., xxii, p. 215 (Feb. 1886); the scales are represented on the posterior wings of *B. eatoni*.

Neurorthus fallax, Rbr. (*Mucropalpus fallax*, Rbr., *Neurorthus iridipennis*, Costa, *Sartena amœna*, Hag.).

Hab. Frais Vallon, near Algiers, 27th October, 1892; Bouzaréa and El Biar, near Algiers, 3rd and 24th April, 1893; Bône, 28th May, 1896; one ♂ from each locality, all indicated as taken near a stream.

Although the type is not in existence I do not hesitate to apply Rambur's name according to the description and the locality (the island of Sardinia). I think only one species is known, but there is some amount of mystery to be cleared up. In the three specimens from near Algiers the abdomen is notably constricted before the apex, and in the ventro-lateral aspect of this constriction there is placed on each side a short filamentous appendage with a vague appearance of articulations; in the example from Bône the constriction is present without the filaments: in a type of *Sartena amœna* from Corsica, the constriction is

present and again no filaments. In examples taken in July, 1893, by Prof. Klapálek at Dragalevci, Bulgaria, there is again the constriction but no filaments. These latter specimens are slightly larger. No mention of either constriction or filaments is made by Rambur, Costa, and Hagen in prior descriptions. Are these filaments fugacious, or are they extensile and retractile? Here is a point to be solved! If there be more than one species here mixed, the characters must be difficult to define. I may mention that one specimen from Bulgaria is evidently ♀, and has a somewhat acuminate ovipositor (or case for such) at the ventral apex of the abdomen. The habits are probably aquatic, unless the fact of the four specimens found by Eaton having been all taken near streams is only incidental.

Micromus aphidivorus, Schrk.

Hab. Constantine, 20th May, 1895, one example.

Hemerobius parvulus, Rbr. ?

Hab. In the forest near Azazga by beating *Quercus suber*, 30th August, 2nd and 20th September, 1893, four examples.

Rambur's *Macropalpus parvulus* from the island of Sardinia has never been thoroughly understood. The species I identify with it (with some doubt) is the same as the *parvulus* of Costa according to a type. It is smaller and paler than *elegans*, Steph. (of which *pygmæus*, Rbr., is usually considered a synonym), and the wings are less strongly mottled. Yet in some respects the description of *pygmæus* reads as if that should be the smaller. I received examples from M. Jules Lichtenstein of Montpellier, who bred them from larvæ found in the galls of *Tetraneura ulmi* and *Pemphigus bursarius*. In the Algerian examples the markings of the anterior wings are more crowded on the apical and inner margins, and form distinct fasciæ on the rows of discal nervules, without markings between the fasciæ. I consider it as undecided whether the forms set down as *parvulus* may be only a small pale southern race of *elegans*, and also whether Rambur's *parvulus* and *pygmæus* may be only racial forms of the same species (*elegans*). It is most unfortunate that Rambur seldom gave any exact measurements in his descriptions, but contented himself with comparisons only.

Megalomus pyraloides, Rbr.

Hab. El Biar near Algiers, 17th and 21st April, 1893, two examples.

Larger than specimens from Sicily, but apparently not distinct.

CHRYSOPIDÆ.

Nothochrysa capitata, F.

Hab. El Biar near Algiers, 21st April, 1893, one example in a spider's web.

Mr. Eaton did not find the striking *N. stigmatica*, Rbr., which is widely distributed in Algeria. I possess an example from Bône (*Pascoe*) and several from Aïn Séfra, South Oran (*L. Bleuse*). Lucas records it from La Calle.

Chrysopa clathrata, Schnd.

Hab. Biskra, 25th March, 1895, one example discoloured and somewhat doubtful.

I have an old specimen in my collection from Algeria, without locality, that is more typical.

Chrysopa genei, Rbr.

Hab. Biskra, 25th April and 8th May, 1894, 15th, 21st and 24th April, 1895, chiefly at light.

Chrysopa caviceps, sp. n.

Body pale yellow (scarcely tinged with green). Head above with a large excavation, the posterior edge of which is straight and the anterior semicircular, occupying the greater part of the disk; sometimes without markings above, but ordinarily with a more or less distinct crescentic brownish mark on the disk anterior to the excavation and a point of the same colour on each orbit; an elongate brownish black spot between the antennæ (often absent), a point on each side on the face under each eye and a short streak (often absent) on each side of the clypeus; palpi yellowish, varied externally with brownish, pale at the articulations; antennæ not longer than the wings, pale brown, narrowly paler at the articulations, microscopically setose, basal joint with a long black streak externally, and a shorter one internally (often absent or reduced to a point), second joint (normally) ringed with black. Pronotum broader than long, the anterior angles oblique, a transverse sulcus and indistinct

longitudinal median impressed line, without markings, but the sides often somewhat brownish; rest of the body, with the underside, ordinarily without markings, but the thoracic lobes sometimes suffused with brownish; legs pale, tarsi somewhat obscure externally, claws testaceous, slightly, but gradually, dilated at the base, *i.e.* "simple" as opposed to the common condition in which the claws are suddenly dilated.

Wings rather broadly oval, obtuse, vitreous, iridescent; venation open, mostly whitish, but the nervules are black at each end, and are furnished with distinct minute black tubercles, whence spring short black hairs, causing a distinct punctate appearance under the lens; pterostigmatic space long, greenish, with 3 or 4 somewhat thickened subcostal nervules beneath it; dividing nervule of third cubital cellule extending only slightly beyond the superposed nervule, 11—14 costal nervules in anterior wing, about 9 cellules between radius and sector, which latter is strongly angulate, gradate series parallel, 2—3 nervules in the inner and 3—4 in the outer (ordinarily 2 in the inner and 3 in the outer in the posterior).

Length of body 5.5—7 mm., expanse 16—21 mm.

The foregoing description has been made from eight examples (which I regard as typical), taken by M. L. Bleuse at Aïn Séfra in South Oran; and I have recently seen others collected much further south in the Sahara by Dr. Chobaut. I have also a series of eight examples taken by Mr. Eaton at Biskra in May and June, 1893 and 1894; the species seems to be common there. All these latter have the head more or less strongly suffused with sanguineous, causing quite a peculiar appearance. I feel sure this is due to the action of ammonia in the killing-bottle, nevertheless it seems advisable not to consider the Biskra examples as typical. It is highly probable that a similar change of colour from the same cause has occurred in the types of some exotic species.

C. cavifrons is clearly allied to *C. genei* and is about the same size, therefore one of the smallest species.

Chrysopa nana, McLach.

Trans. Ent. Soc. Lond. 1893, p. 231, September, 1893 (= *Ch. pretiosa*, Gerst., Mitth. Verein f. Neuvorpommern und Rügen, xxv, p. 158, 1894).*

Hab. Biskra, 3rd June, 1893, 1st May, 1894, 13th, 21st and 27th May, 1895.

* The "Mittheilungen" (xxv) for 1893 are dated 1894 on the cover.

Sixteen examples at oil lamps in the town, those taken in April and May are less strongly irrorated. This pretty little spotted-winged species was originally described from Asia Minor; it occurs also in Persia.

Chrysopa formosa, Brauer.

Hab. Azazga, 13th September, 1893, at a lamp in the inn; Constantine, 20th May, 1895: one rather small example from each locality.

Chrysopa prasina, Burm. (*aspersa*, Wesm.).

Hab. Constantine, 8th May, 1895; Le Tarf, 19th June, 1896.

One example from each locality, that from Constantine has the dark spots on head and thorax nearly obsolete.

Chrysopa lineolata, McLach. (*clathrata*, Ed. Pict. nec Schnd.).

Hab. Biskra, 15th April, 1895, one example at light, in which the neuration is very slightly varied with black, but of the identity of which there can hardly be any doubt.

Chrysopa flavifrons, Brauer.

Hab. Hassein Dey near Algiers, 12th April, 1893; Biskra, 3rd June, 1893, at light; Azazga, 11th September, 1894, at light; Constantine, 18th May, 1895; Le Tarf, 19th June, 1896.

An excessively variable series, but all apparently belonging here so far as one can judge from single examples from each locality.

Chrysopa mutata, sp. n. ? (*vulgaris* var. ?)

In size and general characters similar to somewhat small examples of *C. vulgaris*. Differs in most of the nervules being blackish, except in the middle, those in the postcostal basal area, and the gradate series, entirely blackish (very visible in certain lights); the ciliations on the margins and neuration apparently shorter (even than in Algerian examples of *vulgaris*); *only three nervules in the inner gradate series in the anterior wings* (ordinarily *five* in *vulgaris*).

Hab. Biskra, five examples in March, April and June.

It is the coincidence of the partially blackish neuration and the neural character mentioned above that induces me to think these examples have probably so far differen-

tiated as to be worthy of specific rank. I have seen nothing of the same nature among European specimens of *vulgaris* and the differences seem more decided than in the form or condition known as *microcephala* (Brauer). In three of the examples the dividing nervule of the third cubital cellule is as in normal *vulgaris*, in the others it is coincident with the superposed nervule. The West-African *C. conformis*, Walk., is distinct according to the type, and specimens of *vulgaris* from South Africa, Natal and St. Helena (no doubt introduced) agree sufficiently with those from Europe.

Chrysopa vulgaris, Schnd.

Hab. Fort National, Algiers, Médéa, Azazga, Constantine, Biskra and Le Tarf.

About 25 examples, from nearly every month in the year; no doubt largely introduced with plants from Europe. Some of the examples taken in winter show slight darkening in colour, but the reddish and red-spotted conditions in hibernating examples in Britain are not represented. This is apparently the species recorded by Lucas as *C. perla*.